MATERIAL SAFETY DATA SHEET

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2320
Gaithersburg, Maryland 20899-2320

MSDS Coordinator: Carmen Davis
Telephone: 301-975-6776
FAX: 301-926-4751
E-mail: SRMMSDS@nist.gov

RM Number: 8506a
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RM Name: Water in Transformer Oil

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Emergency Telephone ChemTrec:
1-800-424-9300 (North America)
+1-703-527-3887 (International)

SECTION I. MATERIAL IDENTIFICATION

Material Name: Water in Transformer Oil

Description: A unit of RM 8506a consists of five ampoules with each ampoule containing 9.5 mL of petroleum electrical insulating oil.

Other Designations: Water in **Transformer Oil** (*UNIVOLT N 61**; petroleum electrical insulating oil; distillates [petroleum], hydrotreated [mild] light naphthenic)

Name	Chemical Formula	CAS Registry Number
Transformer Oil	complex mixture	64742-53-6

DOT Classification: Not regulated by DOT

*Exxon Trade Name

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Component	Nominal Concentration (%)	Exposure Limits[(a)] and Toxicity Data
Transformer Oil	100	ACGIH TLV-TWA: 5 mg/m^3
		ACGIH TLV-STEL: 10 mg/m^3
		OSHA TWA: 5 mg /m^3
		NIOSH recommended TWA (10 h): 5 mg/m^3
		NIOSH recommended STEL: 10 mg/m^3
		UK OES TWA: 5 mg/m^3 (excluding metalworking fluids)
		UK OES STEL: 10 mg/m^3 (excluding metalworking fluids)
		Rat, Oral LD_{50}: > 5 g/kg (Exxon)
		Rat, Inhalation LD_{50}: 2 200 mg/m^3/4 h (Baxter Performance Chemicals Incorporated)
		Rabbit, Skin LD_{50}: > 3.16 g/kg (Exxon)

[(a)] All exposure limits are for mineral oil mist.

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

Water in Transformer Oil	
Appearance and Odor: a clear liquid with a mild, bland petroleum odor	**Viscosity (@ 37.8 °C):** 55 SSU
Relative Molecular Mass: ≈ 255	**pH:** neutral
Specific Gravity: 0.88	**Vapor Pressure (at 20 °C):** < 0.01 mm Hg
Boiling Point: ≈ 238 °C	**Water Solubility (@ 1 ATM, 25 °C) :** negligible

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: 145 °C **Method Used:** ASTM D 92

Autoignition Temperature: > 204 °C **Method Used:** ASTM E 659

Flammability Limits in Air (Volume %): **UPPER:** 7
LOWER: 0.9

Extinguishing Media: Use a dry chemical powder, carbon dioxide, or foam. Use extinguishing agents appropriate for surrounding fire. Use a water spray to cool fire exposed containers only. **DO NOT** use a forced water stream directly into an oil fire or spilled material as this will only scatter the fire or spilled material.

Unusual Fire and Explosion Hazards: Heating this material greatly increases the fire hazard. Thermal oxidative degradation may also yield hazardous gases.

Special Fire Procedures: Firefighters should wear self-contained breathing apparatus and full protective clothing.

SECTION V. REACTIVITY DATA

Stability: **X** **Stable** ____ **Unstable**

Stable at normal temperatures and pressure.

Conditions to Avoid: Avoid heat, sparks, pilot lights, static electricity, flames, and other sources of ignition. Containers may rupture or explode if exposed to heat. Dangerous gases may accumulate in confined spaces.

Incompatibility (Materials to Avoid): This material is a fire and explosion hazard when exposed to strong oxidizing agents.

Hazardous Decomposition or Byproducts: Fumes, smoke, carbon monoxide, sulfur oxides, and aldehydes along with other decomposition products can be produced with incomplete combustion.

See Section IV: "Fire and Explosion Hazard Data".

Hazardous Polymerization: ____ **Will Occur** **X** **Will Not Occur**

SECTION VI. HEALTH HAZARD DATA

Route of Entry: X **Inhalation** X **Skin** X **Ingestion**

Health Hazards (Acute and Chronic): The vapor pressure of this material is very low therefore, vapor inhalation under ambient conditions is normally not a problem. However, health studies have shown that many petroleum hydrocarbons and synthetic lubricants pose potential human health risks, which may vary from person to person. As a precaution, exposure to liquids, vapors, mists, or fumes should be minimized.

Prolonged or repeated skin contact with this product may remove skin oils possibly leading to irritation and dermatitis. Contact with the eyes may cause eye irritation. Prolonged or repeated contact may cause conjunctivitis. This product has a low order of oral toxicity, but minute amounts aspirated into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.

Medical Conditions Generally Aggravated by Exposure: acne and dermatitis

Listed as a Carcinogen/Potential Carcinogen:

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens		X
In the International Agency for Research on Cancer (IARC) Monographs		X
By the Occupational Safety and Health Administration (OSHA)		X

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact: Remove contaminated shoes and clothing. Wipe excess oil off with a dry cloth before washing. Wash affected area well with soap or mild detergent and large amounts of water. Obtain medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance.

Inhalation: If inhaled, move the victim to fresh air. If breathing is difficult, give oxygen; if the victim is not breathing, give artificial respiration by qualified personnel. Obtain medical assistance if necessary.

Ingestion: If ingestion occurs, wash out mouth with water. **DO NOT** induce vomiting. Obtain medical assistance immediately. If vomiting occurs, keep head lower than hips. Give artificial respiration by qualified personnel if not breathing.

Target Organ(s) of Attack: skin and upper respiratory tract

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released: Notify safety personnel of leaks and spills. Remove sources of heat or ignition and provide adequate ventilation. Personnel performing the clean-up should use protection against contact with the liquid and vapor or mist inhalation. Small spills can be contained by absorbents, such as rags, straw, polyurethane foam, activated carbon, sand, or other non-combustible material. Collect spilled material in an appropriate container for disposal. Clean up spills promptly to reduce fire or vapor hazards. Large oil spills must be reported to the authorities.

Waste Disposal: Follow all federal, state, and local regulations.

Handling and Storage: Provide a local exhaust ventilation system where operating conditions (heating and spraying) may create excessive vapors and mists. For conditions of frequent use or heavy exposure where exposure is apparent and engineering controls are not feasible, respirator protection may be needed. Refer to the "NIOSH Guide to the Selection and Use of Particulate Respirators, Certified under 42 CFR 84" for selection and

use of respirators certified by NIOSH. Wear protective chemical resistant gloves and chemical safety glasses where contact with the liquid or high vapor concentrations may occur. Additional suitable protective clothing may be required depending on working conditions. An eye wash station and washing facilities should be readily available near handling and use areas. Wash exposed skin areas thoroughly after handling this material. **DO NOT** smoke in areas of use.

> **NOTE:** Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the laboratory.

Store material in closed containers in a cool, dry, well ventilated area away from sources of heat, sparks, open flames, and oxidizing agents. Protect containers from physical damage.

SECTION VIII. SOURCE DATA/OTHER COMMENTS

Sources: Exxon Company USA, MSDS *UINIVOLT N 61*, 01 June 1989.
MDL Information Systems, Inc.; MSDS *Transformer Oil*, 18 September 2003.

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data on the MSDS. The certified values for this material are given on the NIST Certificate of Analysis.